

## AMENDMENTS TO SPECIFICATION

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In the above mentioned FTTH (Fiber To The Home) or ETTH (Ethernet To The Home) application, there is a long distance between Ethernet switch 32 and central office 34. Hence, network is utilized to perform an online maintenance and management since it is impossible of assigning employees to perform the same. Further, it is impossible to perform a real time online maintenance and management on Ethernet switch 32 by central office 34 because a SNMP (Simple Network Management Protocol) being employed by most network management systems only has limited application. When the system fails, a loopback test is typically conducted to detect which component is malfunctioned. During the loopback test, network management system installed in central office 34 is responsible to issue at least one Ping instruction. Ethernet switch 32 then may reply to the Ping instruction as it receives the same. Hence, network management system can determine that Ethernet switch 32 fails if there is no reply of the Ping instruction from ethernet switch 32 within a predetermined period of time. In other words, the only technique employed by network management system is to issue a Ping instruction to Ethernet switch 32 for determining whether there is a malfunction from the presence of reply. As to the special problem such as line disconnection, or software in Ethernet switch 32 not normally running, or any other, there is no information about that. Moreover, after network management system has issued a Ping instruction, a good reply means that both hardware and associated software operate normally. Otherwise, it is impossible of obtaining a good reply as well as correctly determining the nature of the fail. For solving the problem, it is typical to assign employees to the site of Ethernet switch 32 to perform a manual maintenance and management. It is disadvantageous because maintenance and management is poor, cost is high, and communication quality is degraded. Thus, a need for improvement exists.